REMARKS

Claims 1-47 are currently pending in this application. Claims 1-22 are currently under examination. This response is being filed along with a Request for Continued Examination (RCE) and the appropriate fee. Applicant respectfully requests that the rejections be reconsidered in light of the comments offered herein.

§ 103 Rejection of the Claims

Claims 1-6 and 8-12 have been rejected under 35 U.S.C. § 103 by Riedesel, U.S. Patent No. 2,542,058, in view of McDonnel, U.S. Patent No. 5,282,900. Applicant respectfully traverses this rejection.

The Final Office Action asserts that Riedesel teaches a polishing sheet comprising a flexible backing, a binder and resilient particles (column 1, lines 39-46). It is also asserted that Riedesel specifically teaches coating the backing layer with an adhesive binder and pressing the resilient particle into the binder (column 1, lines 40-45). The Final Office Action further asserts that the binders of Riedesel would exhibit the glass transition temperatures found in claims 1, and 8-10. Applicant respectfully submits that Riedesel does not disclose or suggest a binder having a T_g not greater than $+10^\circ$ C, as is recited in claim 1.

Riedesel discloses alkyd resins (column 2, lines 33-44), and polyvinyl butyral resin (column 4, lines 67-71) as binders. As previously submitted and as seen in the 72nd Edition of the Handbook of Chemistry and Physics (included in an IDS filed on even date herewith), the glass transition temperatures (T_g) of those materials are greater than + 10° C.

The Final Office Action also asserts that Riedesel discloses polystyrene and ethyl cellulose binders (Final Office Action, page 3). The Final Office Action cites to column 4, lines 20-25 and lines 58-60. Applicant respectfully asserts that ethyl cellulose and polystyrene resin are not used as binders in Riedesel, but are instead used to impregnate the backing. Riedesel states, at column 2, lines 14-19, that the cloth (backing) was impregnated with a 20% solution of 20 C.P.S. ethyl cellulose. It is specifically stated that the ethyl cellulose stiffened the fabric, provided water-resistance, and improved the anchorage while reducing the penetration of the sizing coat (column 2, lines 20-23). As seen here, one of the purposes of the ethyl cellulose is to reduce the penetration of the sizing coat, which (as seen in Figures 1 and 4) is between the backing and the binder/particle layer. Therefore, the ethyl cellulose cannot possibly function as

the binder because in some embodiments it is not even in contact with the particles. Therefore, the T_g of these materials is irrelevant. However, ethyl cellulose has a T_g of 120 - 124° C (See Aldrich Handbook of Fine Chemicals – included in IDS filed on even date herewith); and polystyrene has a T_g of 100°C. (See CRC Handbook of Chemistry and Physics – included in IDS filed on even date herewith). It can be seen based on these comments that Riedesel fails to disclose all of the elements of claim 1.

Furthermore, Riedesel fails to suggest the elements of claim 1 because as noted in the previous response, Riedesel teaches that the softer binder materials are to be avoided because of their lack of required strength. With respect to the statement in the Final Office Action that Riedesel does not disclose avoiding polystyrene and ethyl cellulose binders (Final Office Action, page 4), Applicant reiterates the comments offered above asserting that Riedesel does not utilize polystyrene and ethyl cellulose as binders, but instead uses them to impregnate the backing in order to modify the properties thereof to create a more desirable backing.

With specific regard to claim 5, the Final Office Action asserted that Riedesel teaches that the fabric backing is filled or impregnated with the binder material, and cites to column 4, lines 20-35 of Riedesel. Applicant respectfully disagrees with this assertion. As discussed above, the material that is impregnated in the backing is not the binder material, but is instead a treatment to change the properties of the backing. Therefore, Riedesel does not disclose the backing being impregnated with the binder material. As seen in Figures 1 and 4, a sizing layer is between the binder material and the backing, and the impregnated material is utilized because it reduces the penetration of the sizing coat into the backing. In the embodiments of Figures 2 (discussed at column 5, lines 20-27) and 3 (discussed at column 5, lines 20-27), there is no sizing layer; however, there is also no disclosure that the binder material in those embodiments infiltrates the backing material or that infiltration would be desirable.

McDonnell offers no disclosure regarding binder materials and therefore fails to remedy the shortcomings of Riedesel, and therefore Applicant respectfully submits that claims 1-6 and 8-12 are not obvious in light of Riedesel and McDonnell.

Claim 7 has been rejected under 35 U.S.C. § 103 by Riedesel, U.S. Patent No. 2,542,058, in view of McDonnell, U.S. Patent No. 5,282,900 as applied to claim 1 above and further in view of Hiroyuki, JP 79007996B. Applicant respectfully traverses this rejection.

Applicant reiterates the comments offered above and respectfully submits that Hiroyuki offers not disclosure regarding binder materials and therefore fails to remedy the shortcomings of Riedesel and McDonnell. Applicant therefore respectfully requests that this rejection be withdrawn.

Claims 13-17 and 19-22 have been rejected under 35 U.S.C. § 103 by Riedesel, U.S. Patent No. 2,542,058, in view of Shuhei, JP 60034659A and further in view of McDonnell, U.S. Patent No. 5,282,900. Applicant respectfully traverses this rejection.

Applicant reiterates the comments offered above with respect to Riedesel. With respect to Shuhei, Applicant initially notes that Shuhei is not discussing an abrasive article, and therefore, Shuhei is not relevant art and is inappropriate art for use in this obviousness rejection.

The Final Office Action asserts that Shuhei teaches a binder composition comprising rubber, styrene/butadiene (Final Office Action, page 7). Applicant respectfully submits that Shuhei does not disclose a binder material, as that term is utilized in claim 13. The binder in claim 13 binds the organic particles to the fibrous web. Contrary to that, the binder composition referred to in Shuhei is utilized in the nonwoven fabric itself (JP 6034659, page 4). The binder composition is utilized to increase the strength, and flexibility of the nonwoven fabric (JP 6034659, page 4 of translation). Therefore, Shuhei fails to disclose any material that functions as a binder as that term is utilized in claim 13. Therefore, Shuhei fails to remedy the shortcomings of Riedesel. Furthermore, even if the materials referred to in Shuhei were binders as that term is utilized in claim 13 (which Applicant does not concede herein), the polyester resin is stated to have a softening point in the range of 40 – 150° C (JP 6034659, page 4). The relationship of a softening point to a glass transition temperature T_g is not clear.

Additionally, the comparative example in Shuhei teaches away from the use of nitrile rubber binders without polyester (Comparative example has 100% carboxyl-modified acrylonitrile-butadiene copolymer latex; and Examples 1-3 add polyester resins) because the comparative example did not function as well as the others. However, the addition of polyester would increase the T_g, so Shuhei is teaching away from the subject matter of claim 13.

With specific regard to claim 17, the Final Office Action asserted that Riedesel teaches that the fabric backing is filled or impregnated with the binder material, and cites to column 4, lines 20-35 of Riedesel. Applicant respectfully disagrees with this assertion. As discussed

above, the material that is impregnated in the backing is not the binder material, but is instead a treatment to change the properties of the backing. Therefore, Riedesel does not disclose the backing being impregnated with the binder material. As seen in Figures 1 and 4, a sizing layer is between the binder material and the backing, and the impregnated material reduces the penetration of the sizing coat in the backing. In the embodiments of Figures 2 (discussed at column 5, lines 20-27) and 3 (discussed at column 5, lines 20-27), there is no sizing layer; however, there is also no disclosure that the binder material in those embodiments infiltrates the backing material or that the infiltration would be desirable.

McDonnell discloses nothing regarding binder materials and therefore fails to remedy the shortcomings of Riedesel and Shuhei, and therefore Applicant respectfully submits that claims 13-17 and 19-22 are not obvious in light of Riedesel and McDonnell.

Claim 18 has been rejected under 35 U.S.C. § 103 by Riedesel, U.S. Patent No. 2,542,058, in view of Shuhei, JP 60034659A and further in view of McDonnell, U.S. Patent No. 5,282,900 as applied to claim 13 above and further in view of Hiroyuki, JP 79007996. Applicant respectfully traverses this rejection.

Applicant reiterates the comments offered above with respect to Riedesel, Shuhei, and McDonnell; and respectfully submits that Hiroyuki discloses nothing regarding binder materials and therefore fails to disclose the shortcomings thereof. Applicant therefore respectfully asserts that the rejection of claim 18 be withdrawn.

Applicant also submits that there may be further reasons why claims 1 and 13 are not obvious and independent reasons why claims 2-12, and 14-22 are not obvious. Applicant does not concede those reasons by not presenting them herein.

Conclusion

Applicant also notes that there may be other arguments which were not presented herein, and Applicant does not concede those arguments by not having presented them herein. Applicant also does not necessarily agree with the correctness of statements made in the Office Action that were not rebutted herein.

In view of the foregoing amendments, Applicants respectfully request reconsideration and allowance of the claims as all rejections have been overcome. Early notice of allowability is kindly requested.

The Examiner is respectfully requested to contact the undersigned by telephone at 651.259.6702or by E-mail at anelson@cnwiplaw.com with any questions or comments.

Please grant any extension of time, if necessary for entry of this paper, and charge any fee due for such extension or any other fee required in connection with this paper to Deposit Account No. 50-3964.

Respectfully submitted,

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